07-05-07

AF

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Razavi	§	Atty. Dkt. No.: F-873
Serial No.: 10/562,718	§	Group Art Unit: 1713
Confirmation No.: 8618	§	Cust. No.: 25264
Filed: June 2, 2006	§	Examiner: Lu
For: Polypropylene Blends having a Narrow Molecular Weight Distribution	§	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
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Dear Honorable Commissioner:

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37 CFR 1.10
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TRANSMITTAL LETTER AND FEE AUTHORIZATION

In connection with the above identified application, Applicants respectfully submit the following documents:

1. Appeal Brief.

The Commissioner is authorized to charge the fee of $500.00, along with any additional fees that may be required for this submission, or credit any overpayments, to Deposit Account No. 03-3345.

Respectfully submitted,

Lenora Evans

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APPEAL BRIEF

Appellants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 1713 dated March 2, 2007, finally rejecting claims 12-25.

Real Party in Interest

The present application has been assigned to TOTAL Petrochemicals Research Feluy, Zone Industrielle C, 7181 Seneffe (Feluy), Belgium.

Related Appeals and Interferences

Appellants assert that no other appeals, interferences or judicial proceedings are known to the Appellants, the Appellants' legal representative or Assignee that will

directly affect, be directly affected by or have a bearing on the Board's decision in the pending appeal.

Status of Claims

Claims 12-25 are pending in the application. Claims 12-25 stand rejected under 35 U.S.C. §103(a). The rejection of the pending claims is appealed. The pending claims are shown in the attached Appendix A.

Status of Amendments

No amendments have been made to the pending claims in response to the Final Office Action.

Summary of Claimed Subject Matter

Independent claim 25 recites a process for the preparation of an isotactic/syndiotactic polypropylene blend. *See,* specification, at least Abstract. The process includes providing a catalyst system comprising an isospecific metallocene catalyst component represented by the formula $R''(CpR^1R^2R^3)(Cp'R'_n)MQ_2$, wherein Cp is a substituted cyclopentadienyl ring, Cp' is a substituted or unsubstituted fluorenyl ring, R" is a structural bridge imparting stereorigidity to isospecific metallocene catalyst component, R^1 is a substituent on the cyclopentadienyl ring which is distal to the bridge, which distal substituent comprises a bulky group of the formula ZR^*_3 in which Z is an atom from group 14 of the Periodic Table and each R* is the same or different and is chosen from a hydrogen or a hydrocarbyl group having from 1-20 carbon atoms, R^2 is a substituent on the cyclopentadienyl ring which is proximal to the bridge and positioned non-vicinal to the distal substituent and is H or a group of the formula $YR\#_3$ in which Y is an atom from group IVA, and each R# is the same or different and is chosen from a hydrogen or a hydrocarbyl group having from 1-7 carbon atoms, R^3 is a further substituent on the cyclopentadienyl ring and may be the same or different from R^2 and is H or a group of the formula $YR\#_3$ in which Y is an atom from group 14, and each R# is the same or different and is chosen from a hydrogen or a hydrocarbyl group having from 1-7 carbon atoms, each R'_n is the same or different and is a hydrocarbyl group having

from 1-20 carbon atoms, and n is an integer of from 0-8; M is a metal atom from group 4 of the Periodic Table or is vanadium; and each Q is a hydrocarbon having from 1-20 carbon atoms or is a halogen. *See,* specification, at least Abstract and paragraph 30-31.

The catalyst system further includes a syndiospecific metallocene catalyst component represented by the formula: $R''(CpR_x)(Cp'R'_y)MQ_2$ wherein Cp is a substituted or unsubstituted cyclopentadienyl ring, Cp' is a substituted or unsubstituted fluorenyl ring, R'' is a structural bridge imparting stereorigidity to the syndiospecific metallocene catalyst component, each R is the same or different and is a hydrocarbyl group having from 1-20 carbon atoms, each R' is the same or different and is a hydrocarbyl group having from 1-20 carbon atoms, and x and y are independently an integer of from 0-4 and 0-8 respectively; M is a metal atom from group 4 or is vanadium; and each Q is a hydrocarbon having from 1-20 carbon atoms or is a halogen; and wherein the substituents are selected in order to impart bilateral symmetry to the catalyst component. *See,* specification, at least Abstract and paragraph 30-31.

The process further includes contacting said catalyst system with propylene under polymerization conditions to produce a blend of an isotactic polypropylene component A that is crystalline and a syndiotactic polypropylene component B that is less crystalline than said isotactic polypropylene component A, said blend being characterized by a molecular weight distribution that has a single composite peak and a polydispersity of 4 or less. *See,* specification, at least Abstract.

Grounds of Rejection to be Reviewed on Appeal

1. The rejection of claims 12-17 and 22-25 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,143,683 (*Shamshoum*) in view of European Patent No. 1,138,687 (*Kawai*).

2. The rejection of claims 18-21 under 35 U.S.C. §103(a) as being unpatentable over *Shamshoum* in view of *Kawai* and WO 00/60148 (*Demain*).

Arguments

I. THE EXAMINER ERRED IN REJECTING CLAIMS 12-17 AND 22-25 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER *SHAMSHOUM* IN VIEW OF *KAWAI*.

Claims 12-17 and 22-25 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,143,683 (*Shamshoum*) in view of European Patent No. 1,138,687 (*Kawai*). *Shamshoum* teachs a metallocene catalyst including an isospecific metallocene component and a stereorigid syndiospecific metallocene catalyst component. *See*, Abstract.

First, Appellants submit that *Shamshoum* does not teach the syndiospecific metallocene component recited in the pending claims. In particular, the sydiospecific catalyst of *Shamshoum* does not include a Cp ring and a fluorenyl ring, as recited in pending claim 25. *Shamshoum* teachs a catalyst including two Cp rings that may be substituted by hydrocarbyl radicals having 1-20 carbons. *See*, column 6, lines 1-6. *Shamshoum* further teaches that in order to produce a syndiotactic polymer, the characteristics of the groups substituted directly on the Cp rings is important. *See*, column 6, lines 20-24. In contrast, the Cp ring of syndiospecific metallocene catalyst recited in the pending claims is substituted so as to provide bilateral symmetry.

Although the prior disclosure of a species within a genus will render the genus unpatentable, the generic disclosure of an invention may not render the species unpatentable. *See*, *In re Baird*, 16 F.3d 380, 29 U.S.P.Q.2d 1550 (Fed. Cir. 1994). Appellants respectfully submit that the generic disclosure of substituents including hydrocarbyl radicals having from 1 to 20 carbons does not render the fluorenyl ligands recited in the pending claims unpatentable. In such a case, there must be a suggestion in the reference to select the particular combination of variables in the formula. *See*, *Id.* at page 382. *Shamshoum* teaches that linear substituents are preferred and does not adequately set forth the teaching of fluorenyl ligands (*e.g.*, two identical C_4 fused substituents). *See*, column 6, lines 46-54. Accordingly, Appellants respectfully request reversal of the rejection. Second, the present claims recite a unimodal product (a single composition peak), while *Shamshoum* results in multimodal product. *See*, column 12, lines 38-42 and Figure 3.

Third, the isospecific metallocene component of the present claims includes indenyl ligands. *See*, column 5, lines 33-63. The Examiner states that "[i]t is noted that *Shamshoum* does not expressly teach the isotactic metallocene catalyst of the instant claims." *See*, Final Office Action at page 2, 4th paragraph. However, the Examiner further states that "using a metallocene containing a bridged cyclopentadienyl and fluorenyl ligand to prepare isotactic propylene polymers is conventional in the art and such is disclosed in *Kawai*". *See,* Final Office Action at page 2, 4th paragraph.

Kawai teaches a metallocene compound including a substituted cyclopentadienyl group and a substituted fluorenyl group. *See*, Abstract. Appellants respectfully submit that there is no motivation to replace the indenyl ligands of *Shamshoum* with the ligands taught by *Kawai* to form an isospecific metallocene catalyst component represented by the formula $R''(CpR^1R^2R^3)(Cp'R'_n)MQ_2$, wherein Cp is a substituted cyclopentadienyl ring and Cp' is a substituted or unsubstituted fluorenyl ring, as recited in the pending claims. The Office Action further states that "*Shamshoum* and *Kawai* are analogous because they both are from the same area of endeavor of metallocene catalyst composition for olefin polymerizations." In moving from the prior art to the claimed invention, one cannot base a determination of obviousness on what the skilled person might try or find obvious to try. Rather, the proper test requires determining what the prior art would have led the skilled person to do. *See*, *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988). Appellants respectfully submit that the prior art would not have led the skilled person to replace the indenyl ligands of *Shamshoum* with the ligands taught by *Kawai* because such a replacement would render the catalyst of *Shamshoum* inoperable for the intended purpose. The intended purpose of *Shamshoum* is specifically the preparation of bimetallic catalyst systems including indenyl bridged metallocenes to produce bimodal molecular weight distribution compositions.

Therefore, reversal of the rejection is respectfully requested.

II. THE EXAMINER ERRED IN REJECTING CLAIMS 18-21 UNDER 35 U.S.C. §103(a) AS BEING UNPATENTABLE OVER *SHAMSHOUM* IN VIEW OF *KAWAI* AND *DEMAIN*.

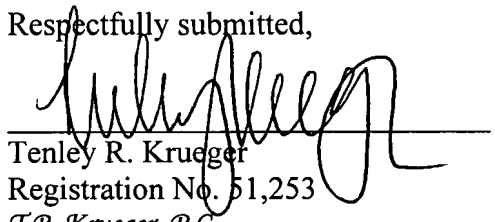
Demain teaches a polypropylene fibre including syndiotactic polypropylene, a first isotactic polypropylene formed by a metallocene catalyst and a second isotactic polypropylene formed by a Ziegler-Natta catalyst. *See*, Abstract. The Examiner states that "*Shamshoum* does not expressly demonstrate the process of extruding fiber from the blend" nor "the preparations of the isotactic and syndiotactic polypropylenes in separate reaction zones". *See*, Final Office Action at page 3, paragraphs 4-5.

Appellants distinguished the primary references *Shamshoum* and *Kawai* from the pending claims in the above discussion and feel that repeating such arguments is unnecessary. *Demain* does not supply the features missing from the primary references. Therefore, a detailed discussion of such is not deemed necessary herein. Based on such previously presented arguments, Appellants respectfully request reversal of the rejection.

Conclusion

In conclusion, the references of record, either alone or in combination, do not teach, show or suggest the features recited in the pending claims. Thus, Appellants respectfully request reversal of the rejections of claims 12-25.

Respectfully submitted,



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Appendix A

Pending Claims

12. The process of claim 25 wherein said polypropylene blend comprises 20 wt. % or less of said syndiotactic polypropylene component.

13. The process of claim 25 wherein said polypropylene blend comprises no more than 15 wt. % of said syndiotactic polypropylene component.

14. The process of claim 25 wherein said polypropylene blend has a dispersion index within the range of 1.8-4.

15. The process of claim 25 wherein said polypropylene has a dispersion index within the range of 2-3.

16. The process of claim 25 wherein said catalyst system is contacted with said propylene in a common reaction zone containing both of said isospecific and syndiospecific metallocene catalyst components to produce said blend of isospecific polypropylene and syndiospecific polypropylene and withdrawing said polymer blend from said reaction zone.

17. The process of claim 16 wherein said isospecific metallocene catalyst component and said syndiospecific metallocene catalyst component are commonly supported on a common support to form a multisite catalyst system.

18. The process of claim 25 wherein said polymer blend is formed into a polypropylene fiber component.

19. The process of claim 18 wherein said fiber component is a bi-component fiber produced by spinning an extrudate of component A with an extrudate of component B to form a fiber having separate components of said components A and components B.

20. The process of claim 18 wherein said fiber component is a bi-constituent fiber formed of blends of said components A and B extruded through a common extruder.

21. The process of claim 25 wherein said polypropylene is contacted with said isospecific metallocene catalyst component and said syndiospecific metallocene catalyst component in separate reaction zones and recovering said isotactic polypropylene component A and said syndiotactic polypropylene component B from said reaction zones separately and thereafter contacting said isotactic polypropylene component and said syndiotactic polypropylene component to produce said blend.

22. The process of claim 25 wherein said polypropylene blend has a melting temperature within the range of 130-155°C.

23. The process of claim 25 wherein said isotactic polypropylene component is a homopolymer.

24. The method of claim 23 wherein said syndiotactic polypropylene component B is a homopolymer.

25. A process for the preparation of an isotactic/syndiotactic polypropylene blend comprising:

providing a catalyst system comprising:

an isospecific metallocene catalyst component represented by the formula

$$R''(CpR^1R^2R^3)(Cp'R'_n)MQ_2,$$

wherein Cp is a substituted cyclopentadienyl ring, Cp' is a substituted or unsubstituted fluorenyl ring, R'' is a structural bridge imparting stereorigidity to isospecific metallocene catalyst component, R^1 is a substituent on the cyclopentadienyl ring which is distal to the bridge, which distal substituent comprises a bulky group of the formula ZR^*_3 in which Z is an atom from group 14 of the Periodic Table and each R* is the same or different and is chosen from a hydrogen or a hydrocarbyl group having from 1-20 carbon atoms, R^2 is

a substituent on the cyclopentadienyl ring which is proximal to the bridge and positioned non-vicinal to the distal substituent and is H or a group of the formula $YR\#_3$ in which Y is an atom from group IVA, and each R# is the same or different and is chosen from a hydrogen or a hydrocarbyl group having from 1-7 carbon atoms, R^3 is a further substituent on the cyclopentadienyl ring and may be the same or different from R^2 and is H or a group of the formula $YR\#_3$ in which Y is an atom from group 14, and each R# is the same or different and is chosen from a hydrogen or a hydrocarbyl group having from 1-7 carbon atoms, each R'_n is the same or different and is a hydrocarbyl group having from 1-20 carbon atoms, and n is an integer of from 0-8; M is a metal atom from group 4 of the Periodic Table or is vanadium; and each Q is a hydrocarbon having from 1-20 carbon atoms or is a halogen; and

a syndiospecific metallocene catalyst component represented by the formula:

$$R''(CpR_x)(Cp'R'_y)MQ_2$$

wherein Cp is a substituted or unsubstituted cyclopentadienyl ring, Cp' is a substituted or unsubstituted fluorenyl ring, R'' is a structural bridge imparting stereorigidity to the syndiospecific metallocene catalyst component, each R is the same or different and is a hydrocarbyl group having from 1-20 carbon atoms, each R' is the same or different and is a hydrocarbyl group having from 1-20 carbon atoms, and x and y are independently an integer of from 0-4 and 0-8 respectively; M is a metal atom from group 4 or is vanadium; and each Q is a hydrocarbon having from 1-20 carbon atoms or is a halogen; and wherein the substituents are selected in order to impart bilateral symmetry to the catalyst component; and

contacting said catalyst system with propylene under polymerization conditions to produce a blend of an isotactic polypropylene component A that is crystalline and a syndiotactic polypropylene component B that is less crystalline than said isotactic polypropylene component A, said blend being characterized by a molecular weight distribution that has a single composite peak and a polydispersity of 4 or less.

Appendix B

Evidence

1. *In re Baird*, 16 F.3d 380, 29 U.S.P.Q.2d 1550 (Fed. Cir. 1994).
2. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

Appendix C

Related Proceedings

Not Applicable